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Editorial

Industrial Crops: It is a truism that a person afflicted with a malady can think of nothing else and in this morbid state of mind falls a prey to the advice of any one who professes to know a speedy and sure cure rather than listen to his family physician. Unfortunately, India is in such a state to-day in regard to the food crisis and lends her ears too easily to the innumerable suggestions, plans and programmes which promise to usher an era of plenty and prosperity without reference to their practicability or advisability. Among the proposals which in our opinion is fraught with grave danger to the future balanced economy of the nation is the proposal emanating from certain quarters that the area under the so-called industrial crops should be restricted, by legislative enactments. We are afraid that in the panic caused by the dislocation of our food supply, we are apt to lose our sense of values and allow enthusiasts for special causes to hold the field. We submit that the cultivator himself and also the group of persons employed by the state to offer advice on agricultural matters, namely the organised agricultural departments in the various Provinces, have a right to be heard on the matter.

Now, let us consider dispassionately what would happen if the proposals to restrict the production of cotton, sugarcane or groundnut, is restricted by a ukase of the Government without taking into consideration the needs of the nation in respect of these commodities, and the area so released is put under food crops. The prices of cloth and sugar in the first instance will rise and foreign countries will dictate their own terms for supplying our needs. As we write, we hear the textile interests protesting that the price of cotton imported from outside, is

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TO OUR CONTRIBUTORS.

Paper is still in short supply. The cost of printing is high — and the Editorial Board will feel obliged if your articles are brief.

beyond their capacity to bear. The history of a recent transaction in jute, is another pointer indicating what lies ahead. Our industries which depend on these commodities will be thrown out of gear and industrial labour already troublesome will grow restless and communism will find a fertile field for spreading discontent and create chaos. Nor is this all. The cultivator baulked at every attempt to increase his wealth will sink into apathy and lacking incentive, will slacken his efforts even with regard to food production.

It should be realised that ultimately the nation as a whole has to foot the bill, whether it is for food or clothing and in a world organised on a monetary economy, as it is at present, the nation with less money at its disposal will ultimately come to grief.

Apart from the undesirable economic reperoussions, which we forsee if the policy of undue restriction on the production of industrial crops is restored to, let us consider the agricultural aspect of the problem. Except in the deltaic tracts as in the Tanjore district, where owing to lack of drainage only paddy could be grown with profit and certain areas in the West Coast where growing of crops other than paddy is precluded by seasonal and soil conditions, the bulk of cultivatable land in other parts of the province both in the rainfed and irrigated tracts are suited to the growing of a variety of crops. In these areas cropping practices have been adjusted by the cultivators to ensure conservation of soil fertility, the prevention and multiplication of pests and diseases and avoidance of soil sickness. The seasonal rainfail is also utilised to a maximum extent. Mixed and rotational cropping in which surface rooted cereals are grown along with or in rotation with deep rooted crops like cotton are in vogue in the entire dry land area of the province. The introduction of the groundnut has given the cultivator a handy crop which can be grown with profit in many places during seasons when other crops will not do so well. The cultivator has by long experience learnt to grow just the crops that will give him maximum returns in his land in relation to seasonal factors, such as for example the date of receipt of the first rain and it will be risky indeed to restrict his choice.

We are of opinion therefore that centralised direction in such matters is attendant with grave risks, and crop planning and regulation from above without reference to local conditions will not only be difficult to carry out in practice, but also even if practicable, would fail to achieve the desired results.

This is not to say that state interference in all cases is undesirable. It goes without saying that the growing of narcotics like opium and ganja should be absolutely prohibited. The tendency in the Northern Circars to encroach on wetlands for the growing of virginian tobacco is to be curbed. The practice of growing tobacco continuously in the Guntur area without resulting to rotation should be put an end to. But barring these exceptional cases which should be dealt with according to the merits, it is our considered opinion that the cultivator should be free to grow the crops which will bring him the most profitable returns. In order to make him grow food crops which is of utmost necessity to-day, he should be offered sufficient inducement (1) by price adjustment narrowing the wide disparity between the prices of food grains on the one hand and industrial raw products on the other (2) by taking away the excess profits from industrial crops by judicious graded taxation (3) by extending the irrigation systems, and providing land in which food crops can be raised with profit.

There are signs that slump is round the corner and when it comes it is the cultivator who will be hardest hit, and in any planning for agricultural production this aspect should not be lost sight of.

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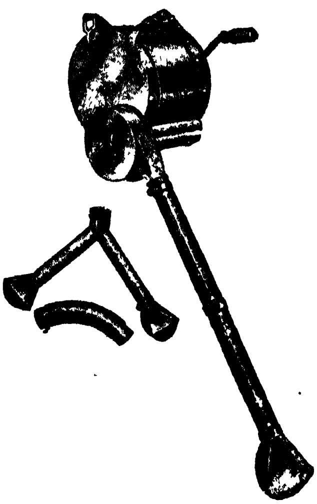

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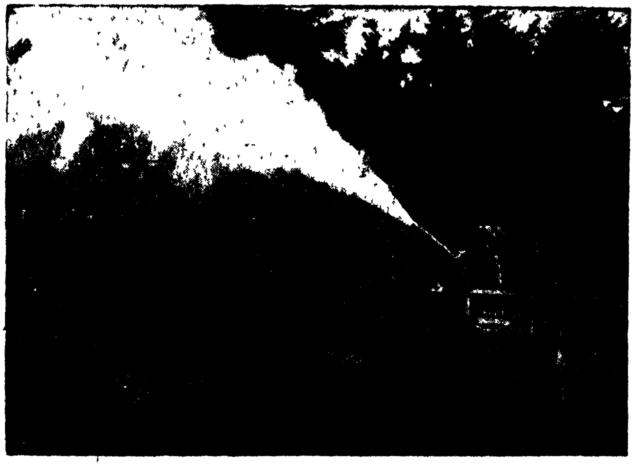

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Economics of Fruit Preservation as a Cottage Industry

By

Dr. G. S. SIDDAPPA, M.A., Ph.D., A.R.I.C.,
(Biochemist)

Although the fruit and vegetable preservation industry is a large one which has been highly standardized, large quantities of surplus fruits and vegetables are preserved in numerous homes and small concerns all the world over. Large commercial concerns which make use of costly machinery and equipment which are often fully automatic with labour-saving devices, pack standard and uniform products for use at home and for the export trade. England, Australia, the U. S. A. and South Africa have built up a large export trade in preserved fruit and vegetables. Numerous homes in these countries, however, preserve their own fruits and vegetables during seasons of plenty. Suitable small-scale equipment by way of can sealers, jam boiling pans, pressure cookers, etc., have been specially designed for this purpose. By propaganda and demonstration, home preservation of fruits has become a safe process in the hands of the average housewife in those countries. In India, however, a beginning has yet to be made in this direction. In the meanwhile, small co-operative concerns and the larger orchards can profitably take up the preservation of fruits on a cottage industry scale. The production of highly standardized products in large well-equipped preservation factories employing automatic machinery and strict technical control should be the ultimate aim.

In the Government Fruit Products Research Laboratory at Kodur, a considerable amount of work has already been done on the preservation of a large number of different kinds of fruits. The methods have been standardized for the preservation of products like canned mangoes, pine-apples, guavas, grape-fruit etc., fruit juices and squashes like lime, lemon and orange squashes, mango and pineapple squashes, watermelon squash, passion fruit squash, cashewapple syrup, tomato juice etc. Different kinds of jams, jellies and marmalades like mango jam, pineapple jam, jack jam, wood-apple jam, banana jam, plum jam, guava jelly, orange marmalade, guava cheese, etc., have all been prepared. Other products like candied rumquat, jack, pineapple, ginger, orange peel and banana fig., banana flour, orange oil, etc , for which methods have been worked out are also of considerable interest. It is thus possible to prepare a large number of useful preserved products from South Indian fruits. In these days of balanced diet, fruits and vegetables with their valuable minerals and

vitamins are almost indispensable. They are important protective foods. Unfortunately, they are highly seasonal and much of the crop is wasted or spoilt during periods of glut. This is a serious loss to the country. Modern science has advanced greatly and it is now possible to preserve fruits and vegetables in all their freshness and richness so that they can be made available throughout the year. At present preserved fruits and vegetables are considered as luxury foods on account of their high cost. When the industry is well organised, it will be possible to bring them within the reach of the common man. The fruit and vegetable preservation industry is an industry of great national and economic importance and its development on a large factory as well as small home-scale should be the concern of the State.

Capital Investment: Very little equipment is required for the preservation of fruits on a small scale. Many of the items are generally available in the average home. Items like can-sealers, thermometers, hydrometers, glass jars, etc., can be purchased easily. A list of items of equipment which are useful for preparing a variety of fruit products is given in Table I. One will be surprised to learn that with this equipment as many as 100–150 cans of fruit, 100–150 bottles of fruit squash and 50–60 lbs. of jam per day can be turn out without any great exertion. The costliest item will be the preparation room and this cannot be avoided. The room should be fly-proof with wire gauze doors and windows. The walls and floor should be smooth and washable. There should be a good drain. A room 20 ft. x 20 ft. will be sufficient for the preservation room. Raw materials and finished products can be conveniently stored in a separate room.

Cost of Production: A large number of preserved products have been prepared at the Government Fruit Products Research Laboratory using equipment similar to that listed. The cost of production has been worked out. The overhead and supervision charges are, however, tentative. A sum of Rs. 10–12 per day towards these will be ample for a small concern. The cost of sugar at nine annas per pound is rather high. The cost of glass containers, corks and cans is also high on account of the abnormal times. There is ample scope for reducing these considerably in normal times. The tentative cost of production of a few typical products is given in the following paragraphs. Actual working data is also given. The costs are on the high side and will be much less when production is regular and to capacity.

The working capital for raw materials, containers, etc., may be taken on the average at about one rupee per can or bottle.

Establishment: The person in charge of the work should have undergone training in fruit canning and preservation at the Government Fruit Products, Research Laboratory. He should have a skilled labourer to assist him in the day-to-day work.

TABLE I.

Equipment for a small fruit preservation unit.

S. No.	Particulars	Number required	Cost Rs.	A.	P.
1	Aluminium basins with lids—capacity 20—100 lb. diameter 10"—20" ...	12	250	0	0
2	Saucepans 3—6 lb. capacity ...	4	10	0	0
3	Mugs ...	4	4	0	0
4	Strainers ...	2	6	0	0
5	Trays ...	2	12	0	0
6	Galvanised steel buckets ...	6	30	0	0
7	Kerosene stoves with 3—4 burners ...	2	75	0	0
8	Charcoal ovens with stand ...	4	16	0	0
9	Sieve for pulping ...	2	8	0	0
10	Spoons, large ...	2	3	0	0
11	Spoons, table ...	6 }	16	0	0
12	Spoons, tea ...	6 }			
13	Knives, stainless steel ...	6	18	0	0
14	China plates of different sizes ...	6	8	0	0
15	Glass tumblers ...	6	2	0	0
16	Orange squeezer ...	1	30	0	0
17	Wooden lime squeezer ...	12	25	0	0
18	Wooden basket press ...	1	160	0	0
19	Spring balance ...	1	30	0	0
20	Goldsmith's scales for weighing preservatives, with weights ...	1	25	0	0
21	Glass funnel 4"—6" diameter ...	2	2	0	0
22	Thermometer 0—240°F. ...	2	20	0	0
23	Brix hydrometer with jar (0—10, 10—20, 20—30, 30—60 and 60—90) ...	1 set	100	0	0
24	Rubber gloves ...	2 pairs.	5	0	0
25	Beakers 100—250 cc. ...	6	4	0	0
26	Perforated skimmer ...	2	2	0	0
27	Can sealer. Dixie automatic ...	1	150	0	0
28	Burpee canning Retort ...	1	150	0	0
29	Coring knives ...	6	15	0	0
30	Pineapple eye extractors ...	3	6	0	0
31	Can opener ...	1	1	0	0
32	Bottle opener ...	2	1	0	0
33	Stone jars. 25—50 lbs. ...	12	50	0	0
34	Glass carboys 5—6 gallon capacity ...	12	150	0	0
35	Cream squezee ...	2	12	0	0
36	Pestle and mortar, porcelain ...	1	4	0	0
37	Bottle cleaning brushes ...	12	2	0	0
38	Crown corking machine ...	1	90	0	0
39	Home dryer ...	1	100	0	0
40	Work tables ...	3	100	0	0
	Total ...		1,692	0	0

I. CANNED PRODUCTS.

	Rs.	A.	P.
(1) *Canned Mangoes* (i) *Neelum.* (in 40 deg. Brix Syrup)			
1. Neelum mangoes, 75 @ Rs. 5 per 100 ...	3	12	0
2. Sugar—3 lb. 7 oz. @ 9 annas per lb. ...	1	14	8
3. Charcoal—¾ basket at Re. 1 per basket ...	0	12	0
4. Labour—¾ man-day at Re. 1 per day ...	0	12	0
Cost of 11 A 2½ cans prepared ...	7	2	8
Hence cost of contents per A 2½ can ...	0	10	5
Add (1) cost of can ...	0	4	0
(2) overhead charges ...	0	2	0
Hence cost of one A 2½ can of Neelum mangoes ...	1	0	5
Present sale price ...	1	8	0
(2) *Bangalora* (in 40 deg. Brix Syrup).			
1. Bangalora mangoes, 22 lb. @ 0—0—9 per lb. ...	1	0	6
2. Sugar—2 lb. 10 oz. @ 9 annas per lb. ...	1	7	8
3. Charcoal ¾ basket @ Re. 1 per basket ...	0	12	0
4. Labour ¾ man-day ...	0	12	0
Cost of 10 A 2½ cans prepared ...	4	0	2
Hence, cost of contents of one A 2½ can ...	0	6	5
Add (1) cost of can ...	0	4	0
(2) overhead charges ...	0	2	0
Hence, cost of one A 2½ can of Bangalora mangoes ...	0	12	5
(3) *Canned guavas* (in 45 deg. Brix Syrup).			
1. Guavas — 13 lb. — 13 oz. at one anna per lb. ...	0	14	0
2. Sugar — 3 lb. 8 oz. at 9 annas per lb. ...	1	15	6
3. Charcoal — 1 basket @ Re. 1 per basket ...	1	0	0
4. Labour — 1 man-day ...	1	0	0
Cost of 17 A-1 small cans ...	4	13	6
Hence, cost of contents of one A-1, can ...	0	4	7
Add (1) cost of can ...	0	2	0
(2) overhead charges ...	0	1	0
Hence, cost of one A-1 can of guavas ...	0	7	7

Note.—A-1 can is only about half the size of A 2½ can.

	Rs.	A.	P.
(4) *Canned Grapefruit* (in 60 deg Brix Syrup)			
1. Grapefruits 4 (4 lb.) @ 8 pies per lb. ...	0	2	8
2. Sugar 1 lb. @ 9 annas per lb. ...	0	9	0
3. Caustic soda for lye peeling 2/3 oz. at 5 annas an ounce ...	0	3	4
4. Charcoal ¼ basket @ Re. 1 per basket ...	0	4	0
5. Labour ¼ man-day ...	0	4	0
Total cost of contents of 2-A 2½ cans ...	1	7	0

	Rs.	A.	P.
Hence, cost of contents of one A 2½ can ...	0	11	6
Add (1) cost of can ...	0	4	0
(2) overhead charges ...	0	2	0
Hence, cost of one A 2½ can of grape fruit ...	1	1	6

Note :— The cost of production of canned chinee orange, loose-jacket orange pummelo, etc., will be about the same.

II. JUICES, SQUASHES AND CORDIALS

(1) *Mango squash* (45 deg. Brix)

	Rs.	A.	P.
1. Country juicy mangoes—200 at Rs. 3 per 100 ...	6	0	0
2. Lime juice—7½ lb. (250 limes) at Re. 1 per 100 ...	2	8	0
3. Sugar 28 lb. 7 oz. @ 9 annas per lb. ...	16	0	0
4. Preservative, pottassium meta bi-sulphite 20 gm. @ 0—3—6 per oz. ...	0	2	6
5. Charcoal, 2 baskets at Re. 1 per basket ...	2	0	0
6. Labour—1 man-day ...	1	0	0
Total cost of 35 bottles of squash. 24 oz. each ...	27	10	6
Hence, cost of contents per bottle ...	0	12	8
Add (1) cost of bottle ...	0	6	0
(2) cost of crown cork ...	0	0	3
(3) overhead charges ...	0	2	0
Hence, cost of one 24 oz. bottle of mango squash ...	1	4	11

(2) *Chinee orange squash (60 Deg. Brix)*

	Rs.	A.	P.
1. Kodur Chinee oranges, 433 @ Rs. 15 per 100 ..	65	0	0
2. Limes 2,000 at Re. 1 per 100 ...	20	0	0
3. Sugar 267 lb. 7 oz. @ 9 annas per lb. ...	150	7	0
4. Preservative, K. M. S., 5 oz. at Re. 0—3—6 per oz. ...	1	1	6
5. Charcoal, 10 baskets at Re. 1 per basket ...	10	0	0
6. Labour, 5 man-days ...	5	0	0
Total cost of contents of 230 bottles x 24 oz. ...	251	8	6
Hence, cost of contents of one bottle ...	1	1	6
Add (1) cost of bottle ...	0	6	0
(2) cost of cork ...	0	0	3
(3) over-head charges ...	0	2	0
Hence, cost of 1 x 24 oz. bottle of orange squash ...	1	9	9

Note:— The cost of fruit is nearly twice the normal price.

(3) *Loose-jacket orange squash* (60 Deg. Brix)

		Rs.	A.	P.
1.	Loose-jacket oranges (Coorg or Santra) 110 at Rs. 8 per 100 ...	8	12	0
2.	Limes 200 at Re. 1 per 100 ...	2	0	0
3.	Sugar 26 lb. 11 oz. at Re. 0—9—0 per lb. ...	15	0	0
4.	Preservative, K. M. S. ½ oz. Re. 0—3—6 per oz. ...	0	1	9
5.	Charcoal 1½ baskets @ Re. 1 per basket ...	1	8	0
6.	Labour 1 man-day ...	1	0	0
	Total cost of 25 x 24 oz. squash ...	28	5	9
	Hence, cost of contents of one bottle ...	1	2	2
	Add (1) cost of bottle ...	0	6	0
	(2) cost of cork ...	0	0	3
	(3) over-head charges ...	0	2	0
	Hence, cost of 1 x 24 oz. bottle of squash ...	1	10	5

(4) *Lime Squash* (50 deg. Brix)

		Rs.	A.	P.
1.	Limes 1,000 @ Re. 1 per 100 ...	10	0	0
2.	Sugar 49 lb.—6 oz. @ Re. 0—9—0 per lb. ...	27	12	4
3.	Preservative K. M. S. 1 oz. at Re. 0—3—6 per oz. ...	0	3	6
4.	Charcoal—2 baskets at Re. 1 per basket ...	2	0	0
5.	Labour 2 man-days ...	2	0	0
	Total cost of 56 x 24 oz. bottles of squash ...	41	15	10
	Hence, cost of contents of one bottle ...	0	12	0
	Add (1) cost of bottle and cork ...	0	6	3
	(2) over-head charges ...	0	2	0
	Hence, cost of 1 x 24 oz. bottle of lime squash ...	1	4	3

Note:— The cost of production is high due to the high cost of sugar.

(5) *Lemon Squash* (45 deg. Brix)

		Rs.	A.	P.
1.	Lemons 38 at Re. 1—0—8 per 100 ...	0	6	4
2.	Sugar 13 lb. 11 oz. @ Re. 0—9—0 per lb. ...	7	11	0
3.	Preservative, K. M. S. 9 grams @ Re. 0—3—6 per oz. ...	0	1	2
4.	Charcoal, 1 basket at Re. 1 per basket ...	1	0	0
5.	Labour 1 man-day ...	1	0	0
	Total cost of 17 x 24 oz. bottles of squash ...	10	2	6
	Hence, cost of contents of one bottle ...	0	9	7
	Add (1) cost of bottle and cork ...	0	6	3
	(2) over-head charges ...	0	2	0
	Hence, cost of 1 x 24 oz. bottle of lemon squash ...	1	1	10

		Rs.	A.	P.
(6) *Pineapple Squash* (50 deg. Brix)				
1. Pineapples, 12 @ Re. 0—8—0 each	...	6	0	0
2. Limes, 150 @ Re. 1 per 100	...	1	8	0
3. Sugar. 16 lb. 5 oz @ Re. 0—9—0 per lb.	...	9	3	0
4. Preservative, K. M. S. 10 grams at 0—3—6 per oz.	...	0	1	3
5. Charcoal 1 Basket @ Re. 1 per basket	...	1	0	0
6. Labour 1 man-day	...	1	0	0
Total cost of contents of 20 x 24 oz. bottles of squash	...	18	12	3
Hence, cost of contents of one bottle	...	0	15	0
Add (i) cost of bottle and cork	...	0	6	3
(ii) overhead charges	...	0	2	0
Hence, cost of 1 x 24 oz. bottle of pineapple squash	...	1	7	3

		Rs.	A.	P.
(7) *Water-melon Squash* (55 Deg. Brix.)				
1. Water-melons 6	...	2	8	0
2. Limes 250 @ Re. 1 per 100	...	2	8	0
3. Sugar 27 lb. 3 oz. @ Re. 0—9—0 per lb.	...	15	4	8
4. Preservative, sodium benzoate 23. 4 gr. @ Re. 0—14—6 per oz.	...	0	12	2
5. Charcoal 1 Basket	...	1	0	0
6. Labour 1 man-day	...	1	0	0
Total cost of contents of 27 x 24 oz. bottles	...	23	0	10
Hence, cost of contents per bottle	...	0	13	8
Add (i) cost of bottle and cork	...	0	6	3
(ii) overhead charges	..	0	2	0
Hence, cost of 1 x 24 oz. bottle of watermelon Squash	...	1	5	11

		Rs.	A.	P.
(8) *Passion Fruit Squash* (55 Deg. Brix.)				
1. Passion fruit 14 lb. at Re. 0—4—0 per lb. plus freight	...	4	10	0
2. Sugar 6 lb. 5 oz. @ Re. 0—9—0 per lb.	...	3	9	0
3. Preservative, K. M. S. 3. 4. grams at 1. 5. pies per gram	...	0	0	5
4. Charcoal 1/4 basket at Re. 1 per basket	...	0	4	0
5. Labour 1/4 man-day	...	0	4	0
Total cost of contents of 6 x 24 oz. bottles	...	8	11	5
Hence, cost of contents of one bottle	...	1	7	3
Add (i) cost of bottle and cork	...	0	6	3
(ii) overhead charges	...	0	2	0
		1	15	6

Note :— The cost of fruit and sugar is very high.

(9) *Cashew-apple Syrup* (60 deg. Brix).

		Rs.	A.	P.
1.	Cashew-apple, 750 @ Re. 0—0—3 per 10 fruits ...	1	2	9
2.	Limes 215 @ Re. 1 per 100 ..	2	2	5
3.	Sugar 27 lb. 10 oz. @ Re. 0—9—0 per lb. ...	15	9	0
4.	Preservative, K. M. S. 23.5 gram @ Re. 0—3—6 per oz. ...	0	3	0
5.	Charcoal 1 basket ...	1	0	0
6.	Labour 1 man-day ...	1	0	0
	Total cost of contents of 24 x 24 oz. bottles ...	21	1	2
	Hence, cost of contents per bottle ...	0	14	1
	Add (i) cost of bottle and cork ...	0	6	3
	(ii) overhead charges ...	0	2	0
	Hence, cost of 1 x 24 oz. bottle of cashew-apple syrup ...	1	6	4

(10) *Fruit cocktail*

		Rs.	A.	P.
1.	Chinee orange squash 4 x 24 oz. bottles at 1—9—9 each ...	6	7	0
2.	Pineapple squash 4 x 24 oz. bottles at 1—7—3 each ...	5	13	0
3.	Tomato juice 2 x 24 oz. bottles at 1—1—1 each ...	2	2	2
	Total cost of 10 x 24 oz. bottles of Fruit cocktail ...	14	6	2
	Hence, cost of 1 x 24 oz. bottle ...	1	7	0

(11) *Tomato juice*

		Rs.	A.	P.
1.	Tomatoes 24 lb. at Re. 0—8—0 per 3 lb. ...	4	0	0
2.	Common salt 2½ oz. ...	0	0	1
3.	Charcoal 1 basket ...	1	0	0
4.	Labour ½ man-day ...	0	8	0
	Total cost of contents of 10 x 24 oz. bottle ...	5	8	1
	Hence, cost of contents per bottle ...	0	8	10
	Add (i) cost of bottle and cork ...	0	6	3
	(ii) overhead charges ...	0	2	0
	Hence, cost of one 24 oz. bottle of tomato juice ...	1	1	1

Note:— The cost of tomatoes is very high.

III. JAMS, JELLIES AND MARMALADES.

(1) *Mango Jam.* (Bangalora)

		Rs.	A.	P.
1.	Mangoes, Bangalora, 74 fruits weighing 73½ lb at Re. 0—0—9 per lb. ...	3	7	2
2.	Sugar 35½ lb. at Re. 0—9—0 lb.	19	13	3
3.	Tartaric Acid, 6 2/3 oz. at Re. 0—3—6 per oz. ...	1	7	4
4.	Charcoal 2 Baskets at Re. 1 per basket ...	2	0	0
5.	Labour 2 man-days ...	2	0	0
	Cost of 38 x A 2½ cans of jam (85 5/8 lb) ...	28	11	9

		Rs.	A.	P
Hence, cost of one lb.	...	0	5	4
Cost of one A 2½ can jam	...	0	12	1
Add (i) cost of can	...	0	4	0
(ii) overhead charges	...	0	2	0
Hence, cost of 1 A 2½ can mango jam	...	1	2	1

(2) *Mango Jam.* (Neelum)

		Rs.	A.	P
1. Mangoes, Neelum 133 at Rs. 5/- per 100	...	6	10	8
2. Sugar 16 lb. 8 oz. at Re. 0—9—0 per lb.	...	9	4	6
3. Tartaric acid, 87-4 grams at Re 0—3—6 per oz.	...	0	10	11
4. Charcoal 1¼ baskets at Re. 1 per basket	...	1	4	0
5. Labour 1 man-day	...	1	0	0
Cost of 417/16 lb. of jam (18 cans-A 2½ size)	...	18	14	1
Hence, cost of one lb. jam	...	0	7	3
Cost of contents of one A 2½ can	...	1	0	9
Add (i) cost of can	...	0	4	0
(ii) overhead charges	...	0	2	0
Hence, cost of one A 2½ can mango jam	...	1	6	9

(3) *Plum Jam*

		Rs.	A.	P
1. Plums — sour — 14 lb at Re. 0—5—0 per lb.	...	4	6	0
Freight from Coonoor	...	0	12	0
2. Sugar, 10 lb. @ Re. 0—9—0 per lb.	...	5	10	0
3. Charcoal, ¾ basket at Re. 1 per basket	...	0	12	0
4. Labour — 3/4 man-day	...	0	12	0
Total cost of 19½ lb. jam	...	12	4	0
Hence, cost of 1 lb. jam	...	0	10	1
Cost of jam in an A 2½ can (2½ lb.)	...	1	9	2
Add (i) cost of can	...	0	4	0
(ii) overhead charges	...	0	2	0
Hence, cost of an A 2½ can of plum jam	..	1	15	2

(4) *Pineapple Jam.*

		Rs.	A.	P
1. Pineapples 4 at Re. 0—8—0 each	...	2	0	0
2. Sugar 3 lb. 11 oz @ Re. 0—9—0 per lb.	...	2	1	2
3. Limes 5 @ 2 pies each	...	0	0	10
4. Charcoal ½ basket at Re. 1 per basket	...	0	8	0
5. Labour 1/3 man-day at Re. 1 per day	...	0	5	4
Total cost of 5½ lb. jam	---	4	15	4
Cost of 1 lb. jam	...	0	14	5

		Rs.	A.	P.
Cost of 2½ lb. jam (1 A 2½ can)	...	2	4	1
Add (i) cost of can	...	0	4	0
(ii) head charges	...	0	2	0
Hence, cost of an A 2½ can of pineapple jam.	...	2	10	1

Note:— The cost is very high on account of the high cost of fruit.

(5) *Jak Jam*

		Rs.	A.	P.
1. Jak fruit. 2 @ Rs. 1—8—0 each	...	3	0	0
2. Sugar 9 lb @ Re. 0—9—0 per lb.	...	5	1	0
3. Tartaric acid 48 gr. @ Re. 0—3—6 per oz.	...	0	6	0
4. Charcoal, 1 basket	...	1	0	0
5. Labour 1 man-day	...	1	0	0
Total cost of 17 lb. jam	...	10	7	0
Hence, cost of 1 lb. jam	...	0	9	10
Cost of 2½ lb. jam (A 2½ can)	...	1	8	7
Add (i) cost of can	...	0	4	0
(ii) overhead charges	...	0	2	0
Hence, cost of an A 2½ can of jak jam	...	1	14	7

(6) *Banana Jam.*

		Rs.	A.	P.
1. Bananas, 61 @ Rs. 2—2—0 per 100	...	1	4	8
2. Sugar 7¼ lb. Re. 0—9—0 per lb.	...	4	1	3
3. Tartaric acid, 38 gram @ Rs. 0—3—6 per oz.	...	0	4	9
4. Charcoal ½ basket at Re. 1 per basket	...	0	8	0
5. Labour ½ man-day	...	0	8	0
Cost of 5 x A 2½ cans (13 3/8 lb. jam)	...	6	10	8
Cost of 1 lb. of jam	...	0	8	0
Cost of jam in an A 2½ can	...	1	5	4
Add (i) cost of can	...	0	4	0
(ii) overhead charges	...	0	2	0
Hence, cost of an A 2½ can of banana jam	...	1	11	4

(7) *Custard apple Jam.*

		Rs.	A.	P.
1. Custard apples, 54 @ Rs. 5/- per 100	...	2	11	2
2. Sugar, 3 ib. 3 oz. @ Re. 0—9—0 per lb.	...	1	12	7
3. Tartaric acid, 17 gram @ Re. 0—3—6 per oz.	...	0	2	2
4. Charcoal, 1/8 Basket @ Re. 1 per basket	...	0	2	0
5. Labour 1/8 man-day at Re. 1 per day	...	0	2	0
6. Cost of 5 lb. 5 oz. jam	...	4	13	11

	Rs.	A.	P.
Hence, cost of 1 lb. jam ...	0	14	8
Cost of 2½ lb. jam (1 x A 2½ can) ...	2	4	8
Add. (i) cost of can ...	0	4	0
(ii) overhead charges ...	0	2	0
Hence, cost of an A 2½ can of custard apple jam ...	2	10	8

Note:— The cost is high since the yield of jam is low due to losses in handling small experimental lots.

(8) *Woodapple Jam.*

	Rs.	A.	P.
1. Woodapples, 9 at 0—0—6 each ...	0	4	6
2. Sugar, 1 lb. 8 oz. @ Re. 0—9—0 per lb. ...	0	13	6
3. Tartaric acid, 6·4 gram at Re. 0—3—6 per oz. ...	0	0	10
4. Charcoal 1/8 basket at Re. 1 per basket ...	0	2	0
5. Labour 1/8 man-day at Re. 1 per day ...	2	0	0
Cost 3 3/16 lb. of jam. ...	1	6	10
Hence, cost of 1 lb. jam ...	0	7	2
Cost of ?½ lb. jam (1 x A 2½ can) ...	1	1	5
Add (i) cost of can ...	0	4	0
(ii) overhead charges ...	0	2	0
Hence, Cost of an A 2½ can of Woodapple jam ...	1	7	5

(9) *Guava Jelly.*

	Rs.	A.	P.
1. Guavas, 36 lb. 14 oz. at Re. 0—1—0 per lb. ...	2	5	0
2. Sugar 32 lb—6 oz. at Re. 0—9—0 per lb. ...	18	3	5
3. Tartaric acid,, 5 oz. at Re. 0—3—6 per oz. ...	1	1	6
4. Charcoal 2½ baskets at Re. 1 per basket ...	2	8	0
5. Labour 2½ man-days at Re. 1 per day ...	2	8	0
Cost of 46 3/8 lb. of jelly ...	26	9	11
Hence, cost of 1 lb. jelly ...	0	9	2
Cost of 2½ lb. jelly (1 x A 2½ can) ...	1	6	11
Add (i) cast of can ...	0	4	0
(ii) overhead charges ...	0	2	0
Hence, cost of an A 2½ can of guava jelly. ...	1	12	11

(10) *Orange marmalade*

	Rs.	A.	P.
1. Marmalade oranges, 115 at Re. 1 per 100 ...	1	2	5
2. Sugar, 13 lb. 7 oz. at Re. 0—9—0 per lb. ...	7	9	0
3. Charcoal, 1¼ baskets at Re. 1 per basket ...	1	4	0
4. Labour, 1 man-day ...	1	0	0
Cost of 17½ lb. (7 A 2½ cans) of marmalade ...	10	15	5

	Rs.	A.	P.
Hence, cost of 1 lb. of marmalade ...	0	10	2
Cost of 1 x A 2½ can marmalade ...	1	9	1
Add (i) cost of can ...	0	4	0
(ii) overhead charges ...	0	2	0
Hence, cost of an A 2½ can of orange marmalade ...	1	15	1

IV. DRIED PRODUCTS.

(1) *Banana Figs*

1. Bananas (Pacha Arati, Local variety) 200 at Rs. 2 per 100	4	0	0
2. Sulphur ½ oz. at Re. 0—2—0 per oz. ...	0	1	0
3. Charcoal 2 baskets at Re. 1 per basket ...	2	0	0
4. Labour 1/4 man-day at Re. 1 per day ...	0	4	0
Cost of 6½ lb. of figs ...	6	5	0
Hence, cost of 1 lb. of banana figs, loose ...	0	15	6

(2) *Banana Flour*

1. Bananas (Bontha Arati variety) 75 at Rs. 1—8—0 per 100 ...	1	2	0
2. Charcoal, 1 basket at Re. 1 per basket ...	1	0	0
3. Labour, 1/4 man-day at Re. 1 per day ...	0	4	0
Cost of 2½ lb. flour ...	2	6	0
Hence, cost of 1 lb. of banana flour (loose) ...	0	15	3

V. CANDIED PRODUCTS.

(1) *Ginger Candy*

1. Ginger 7 lb. at Re. 0—7—0 per lb. ...	3	1	0
2. Sugar, 4 lb. at Re. 0—9—0 per lb. ...	2	4	0
3. Charcoal, ½ basket at Re. 1 per basket ...	0	8	0
4. Labour ½ man-day ...	0	8	0
Cost of 3 lb. candy ...	6	5	0
Hence, cost of 8 lb. ginger candy loose ...	2	1	8

(2) *Citrus peel candy*

1. Sugar, 4 lb. at Re. 0—9—0 per lb. ...	2	4	0
2. Common salt, 1 lb. 13 oz. at 0—0—9 per lb. ...	0	1	3
3. Charcoal, 1/3 basket at Re. 1 per basket ...	0	5	4
4. Labour, 1/4 man-day ...	0	4	0
Cost of 3 lb. candy ...	2	14	7
Hence, cost of 1 lb. citrus peel candy (loose) ...	0	15	6

(3) *Jak candy*

		Rs.	A.	P.
1. Jak fruit one at Re. 0—12—0	...	0	12	0
2. Sugar, 3 lb. at Re. 0—9—0 per lb.	...	1	11	0
3 Charcoal, 1/3 basket at Re. 1 per basket	...	0	5	4
4. Labour 1/4 man-day at Re. 1 per day	...	0	4	0
Cost of 2 lb. candy	...	3	0	4
Hence, cost of 1 lb. of jak candy (loose)	...	1	8	2

Note:— The syrup can be bottled as "Jak syrup".

(4) *Kumquat candy*

		Rs.	A.	P.
1. Kumquats, 309 at Re. 0—2—0 per 100	...	0	6	2
2. Sugar, 9 lb. at Re. 0—9—0 per lb.	...	5	1	0
3. Charcoal, 1½ baskets at Re. 1 per basket	...	1	8	0
4. Labour 1 man-day	..	1	0	0
Cost of 7 lb. candy	...	7	15	2
Hence, cost of 1 lb. kumquat candy (loose)	...	1	2	2

Note:— The candying processes are spread over 8—10 days, but they can be carried out by persons engaged for the preparation of other products.

VI. PICKLES AND CHUTNEYS.

(1) *Sweet Mnago Chutney*

		Rs.	A.	P.
1. Mangoes — Bangalore, 30 fruits (25½ lb.) at Rs. 7—8—0 per 100		2	4	0
2. Sugar, 14 lb. at Re. 0—9—0 per lb.	...	7	14	0
3. Common salt, 14½ oz. at Re. 0—0—9 per lb.	...	0	0	8
4. *Spices, onion, chillies and ginger	...	1	11	0
5. Vinegar, 3⅝ lb. at Re. 0—12—0 per lb.	...	2	11	6
6. Charcoal 1¼ baskets at Re. 1 per basket	...	1	4	0
7. Labour 1 man-day	...	1	0	0
Cost of 24 3/8 lb. chutney	...	16	13	2
Hence, cost of 1 lb. sweet mango chutney, loose	...	0	11	1

Note:— The chutney may be packed in 1 lb. glass jars with bakelite caps. It is a very good product.

**Spices, etc., used.*

		Rs.	A.	P.
Cloves	6 tolas	0	4	0
Cinnamon	6 tolas	0	4	0
Cardamom	3 tolas	0	3	0
Mace	3 tolas	0	3	0
Aniseed	6 tolas	0	4	0
Cumin	6 tolas	0	2	0
Red Chillies	12 tolas	0	2	0
Onions	1½ lb.	0	3	0
Ginger	6 tolas	0	2	0
	Total	1	11	0

*An Organisation to Check the Present Food Crisis in India

By

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AGENCIES THAT LED TO THE PRESENT CRISIS

(i) *Lessons of Agricultural Crisis in Retrospect.* In planning to end the crisis, a dive into the past agricultural crises will throw a flood of light to get over the present one. A crisis followed always a war of the first magnitude. The first in modern times was after the Napoleonic wars; the next, after World War I. A period of scarcity of food stuffs each time was followed by a slump and falling prices. An Agricultural Depression prevailed in Europe from 1824 to 1835; it recurred in 1875 and ended by 1905. Improvement in communications and the rise in the price of gold helped the recovery. According to the Economic committee of the League of Nations, "in 1909—13, cereal prices were 20% higher than the average level of the years 1891—1900". The Depression from 1929 to 1939 had its trough in 1934. To this Depression were ascribed the causes, of over production by various countries to supply food to the belligerents during the war and the technical progress in the U. S. A., by a heavy increase in the number of tractors and better farm equipment. In the trough of the Depression, these very farm-steads became bankrupt and the U. S. A. had to liquidate and possess them. The scorched-earth policy of World War II and the non-recovery from it effects by now of several countries and the the control and manipulation of currencies under dollar pools and sterling pools are responsible for the present scarcity of food. Statisticians, with periodicity curves in several branches of Agriculture and Industry, mention of an intensive coalescing Depression between 1951 and 1953. Were scarcity and slump to follow in close sequence as in the past, planning both short-term and long-range, to tide over the present crisis should be done with extreme care.

(ii) *Present Food Crisis — Remote and Immediate Causes.*

A. Remote Causes.

1. *Unbalanced agricultural economy and craving for more industrial goods.* With improvement in the standard of living, the comfort

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and luxuries of a past age become the necessaries of a subsequent age. The Administration operating the controls listed out as essential articles, a certain number of the consumers' requirements. How many of them were essential in Asoka's reign? In the reign of Prithvi Raj? Of Krishna Deva Raya? Of Sivaji? And at the present time? Would the present population agree to a pristine set up? Can the Administration arrange to educate the population, to have for their vocation, the production of food and cloth and deter them from the production of cash crops and manufacturing industries The proportion in the pursuits of Agriculture and Industry have to be defined by the State to tide over the Crisis.

2. *Country bound by Western economy.* India for nearly two centuries has been fitted into Western economy. Currency, banking, exchange, export trade in raw products and import trade in manufactured goods are all interlinked. To escape the grip of these economic tentacles and have a sound food policy, India's agriculture must be bounty-fed.

B Immediate Causes

While such had been the remote causes, the immediate causes of the present food crisis have all their roots in the last Economic Depression.

Manure starved land in falling prices Cattle manure and the house-hold and farmyard sweeping are supplemented in any year, with other purchased manures with the rise in prices. These purchases were curtailed with the fall in prices and were next to nothing in the trough of the Economic Depression, when the value of the produce did not meet even production costs. Several cultivators in 1934 had to pawn jewels and pay taxes. The investment on the manure was in the decline; and when the Second World War broke out, the fertility of the soil was nothing more than that of the recuperating nitrates of the summer weathering, plus the available cattle manure, sweepings and offal from the holding. This was a great contributory cause for decreasing production, in the earlier years of the war.

2. *Best paddy land is diverted to non-food crops.* Production did not keep pace in spite of the make-up, or increase in area from marginal land, newly put under it.

3 *Political repercussions on indigenous paddy production* When the country took to hand spinning and paralysed the Lancashire Textile Industry, Lancashire products were diverted to Netherland Indies, Siam etc., which paid for them, by

importing, broken rice into Madras, at Rs. 3/- to Rs 5/- (from 1931 onwards), per bag of 166 lb., with subsequent monetary adjustments between India and the United Kingdom. This was a factor beyond the limits of the Provincial Government and the Agricultural departments. This low priced import from the Far East and from Burma to the tune of fourteen million tons of rice annually, struck the local rice cultivator at the very root of his economics. The Government wanted the Agricultural department, at the time, to suggest alternative cropping, to enable the ryot to balance the expenditure on his holding and pay taxes by raising more renumerative crops. Paddy was discouraged and garden crops suggested till World War II. Food for the first time had come under Politics. There could be an International Wheat Agreement and not Rice Agreement.

Present pessimism on production and yields cannot be helped when price controls and subsidies to essential commodities are inadequate. The local rice cultivator stood unrecognised so long as the imports of paddy from the Far East and Burma were annually received. He could not then be helped with better prices or with subsidies. Even now price levels are maintained by the Central Government, the local Governments being only recommendatory bodies for price fixation.

5. *Transition of land from the cultivating small holder.* The small holder entirely dependent on Agriculture and with no subsidiary occupation, under indebtedness had to alienate his holding to the capitalist, the money-lender, or the landed-proprietor. To the first two classes, farming was a commercial proposition ; to the third, all land beyond his capacity for cultivation was also a commercial proposition under falling or less attractive prices. Personal interest in land was thus lost in large regions in this transition.

6. *Lack of progress in the production of the old Deltas.* The old deltaic lands are fairly stabilised in their physical condition. The results of crop cutting experiments have shown, during the past three years in the Godavary Districts that paddy transplanted early i. e , prior to 15th July, yields higher than all subsequent plantings, as sub-joined results show.

The optima of water requirements at the planting, flowering and seed-setting stages are not met by more than a third of the paddy ayacut. As the earlier planted crops have 150-200% yields of the late planted, the construction of reservoirs and regulators high up on the rivers of these old deltas, would double production from existing deltas, in addition to crops on fresh ayacuts that spring up.

Disrict	Time of planting	Percentage proportion in area. 1945-46	1946-47	1947-48	Yield in lb. per acre 1945-46	1946-47	1947-48
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I. East Godavary.	Early (before 15th July.	34	33	28	1432*	1739	2397
	Middle (16th July to 15th Aug,	52	50	62	1798	1279	1985
	Late (after 15th Aug.)	14	17	10	1169	623	1069
II. West Godavary.	Early (before 15th July)	37	63	36	1462	1878	1944
	Middle (16th July to 15th Aug.)	46	51	54	1345	1215	1636
	Late (after 15th Aug.)	17	6	10	1159	1529**	1251

* Grain blown off these crops which matured in the severe cyclone of October 1945

** Late varieties in Kollair lake ayacut had a good season

WAY TO END THE CRISIS.

I. Long-Term Policy.

1. *Large irrigation projects, the chief panăcea — The G. M. F. Schemes collectively are no match to a helping season.* A summary of measures taken and concessions given by the Government is published, in a pamphlet under the title 'Grow More Food'. It will be expected from the grants made by the Central Government and Provincial Government and expended by the departments of Revenue, Agriculture, P. W. D., Cŏ-operation, Industries etc., that more food is added year after year. It will be surprising to note that the production figures as given in some of the Season and Crop Reports are much higher for the early-war years than the late war or post-war years. The seasons of some of the early war-years were much better in enabling timely sowings and plantings, and in assisting to put crops in greater ayacuts under the same sources of irrigation than in the late-war or post-war years. It is not a loan or a bonus,

good seed or more manure, the remodelling of a channel or an ayacut, or measures of the kind that can end the crisis. Gigantic projects for irrigation coupled with flood control and hydro-electricity development can alone mend and end the present and future crises. By such planning, production can be increased to 200% by regulated water supply enabling timely planting etc., in the existing ayacuts; double crops can be raised in them; and fresh ayacuts developed for new production.

Drainage schemes follow as a natural corollary to all irrigation projects. Their need in the old deltas is manifest.

2. *Planning between Agriculture and Industry.* The value of agriculture, for promoting material prosperity beyond a stage is limited. The industrial world by bringing into existence fresh industries is absorbing much of the capital and skilled labour to the detriment of agricultural progress and development. Sri M. Visveswaraya, proposed to reduce the population supported by agriculture from 250 million to 200 million, in a ten-year plan. Organised planning between agriculture and industry should put a stop to diversion of pursuit from one to the other, without recourse to ordinances as in the present case of agricultural labour in the Central Provinces moving into "beedi" manufacture.

3. *Barter through failure of Western Economy.* Industrial supremacy, maritime commerce, liberation of specie from mining give power to control currencies and manipulate exchanges India in its non-age in these respects, avoids western economy and resorts to the barter under bilateral agreements which she now pursues. Wheat from Russia and Australia, rice from Burma and the Far East, maize from Argentina, heavy machinery from Czechoslovakia, capital goods from Britain, automobiles from America are present examples. Planning is necessary to balance the trade and cut out imports of food beyond a limit.

4. *Minor engineering against scouring and soil erosion.* A permanent Soil Conservation department may be established. Part of the cess-funds for researches on crops may be diverted to the execution of projects under soil erosion.

5. *Constitution of economic holdings.* Agricultural progress was by rapid strides in other countries, with the constitution of economic holdings.

In Denmark, the present farms were exempted from the inheritance by each child of a family. In England the law of Entail concentrated the land in a few hands. In Sweeden, the State took the initiative and enforced that each peasant's land should be a single piece. In Austria, the economic holding has been recognised by law, with hereditary indivisibility and alienation from debts not extinguishable in a few years. In Italy, comprehensive measures have been taken to induce the people to form economic holdings. Legislation in India, for the purpose, should be such as to make small holdings coalesce and big holdings dwindle down into the economic unit of the region. Uneconomic small bits of holdings, may be purchased by the State and offered for sale to coalesce with the holdings of adjoining owner-cultivators.

II. Short-Term Policy by the Departments.

1. *Merger of food organisation in the Firka Development Scheme.* The All India Manufacturers' Association, under the leadership of Sri M. Visveswaraya, have a 'Village Industrialisation Scheme', for the 700,000 villages of the country, by grouping them into numbers ranging from 10 to 15. The province of Madras has the Firka Development Scheme and into this, the food organisation may be merged. A suitable committee from the firka is to be responsible for the productian and distribution to meet the needs of the firka.

With a choice left to the ryot, to put more area or less area, good or bad land under food or non-food crops, based on prevailing prices, production cannot organise itself to the tune of requirement. The firka committee with the help of the village officers, a year in advance, may work out the food needs of the families in the firka, make it incumbent on the holders of land to grow their food first, before they think of non-food crops. The deficits in requirement as well as the surpluses will be intimated to a taluq organisation which will effect the necessary transfers. The district organisation will deal with inter-district transfers under advice of a Provincial Organisation.

2. *Grain Banks.* It was a policy of the Japanese Government to store rice to last two or three years, to prevent starvation in emergency. The construction of M. B. sheds may be extended to each village. To pool stocks of grains, grain banks may be instituted. This may be part of the firka development work referred to previously. As the owner-cultivators comprise 15% and the cultivating tenants 5% of the population, the former body may be suitably induced to cede

their food-grains over their requirements to the Bank. If the village is not self-sufficient in its needs of food, a Collective farm may be run to meet the village needs.

3. *A directory of agricultural improvements based on the Settlement Classification of Soils.* There are economic surveys of several districts in the Provinces and States conducted during the last three decades More than these surveys, a directory of agricultural improvements with different crops of different kinds of soils is necessary. Though not endowed with a knowledge of the soil science and the requirements of crops, the Settlement Officers laboured hard for over 87 years to sort out and classify soils from their physical properties and from observations of crop stand, as alluvial, permanently improved, black-regar, red-regar, calcareous and arenaceous. The regars and the calcareous are further divided into clay, loam and sand and the arenaceous into loamy-sand and heavy-sand. Each of these sub-divisions are further detailed into 'best,' 'good', 'ordinary', 'inferior' and 'worst', from experience of crop growth and productivity. The District Agricultural Officer of a district may prepare a directory of improvements for each crop that can be raised on every minor division of the soil in the district, based on this settlement classification. The costs of cultivation of crops may be worked out for each of these minor divisions, as bullock-days, men-days, women-days and juvenile-days, for permanent reference, avoiding the changing labour rates.

4. *The Comprehensive Scheme must justify its title.* The targets of production for the districts and the taluqs must ultimately be extended to every survey number of the Permanent Register of the village. The elaborated staff under the scheme must be made to tackle each survey number, assess the margin of production that can be enhanced by applying to the field of the survey number, one and all of the improvements of the 'directory' herein-before mentioned. The District work Register of the Agricultural department is to be written for every survey number. To implement this direction, the Agricultural Demonstrator may be supplied with the Settlement Registers of the villages in his jurisdiction.

5. *The economic manuring of each field.* "In most parts of India, soil fertility is stabilised at comparatively low level". So concluded Dr. Burns, after an examination of the results of over 5,000 manurial experiments in India. The results of crop cutting experiments on paddy, in the last three years, indicate enhanced yields of manured fields over those not manured, from 14% to 30% for the I crop

and from 22% to 48% for the II crop in the Godavari Districts. With manure supplies ear-marked, this is the easiest way to improve production. The crop cutting experiments also show the percentage of land that got manured and the percentage in it that received supplies of cake and fertilisers from under the State Trading Schemes. The figures in the table below relate to the Godavary Districts.

	East Godavary		West Godavary	
Year and crop.	Percent of land that received manuring	Percent of land that received cakes & fertilisers from under Trading Schemes	Percent of land that received manuring	Pecent of land that received cakes and fertilisers from under Trading Schemes
(1)	(2)	(3)	(4)	(5)
1945-46				
I Crop.	53	4	46	20
II Crop.	60	49	43	17
1936-47				
I Crop	54	18	27	6
II Crop.	71	42	37	30
1947-48				
I Crop.	57	13	44	4
II Crop.	64	28	31	14

The State Trading Schemes accounted roughly to a third of the total manuring. These scheme aided by the floating capital may also merge into the Firka Development Scheme.

Present manure hunger is insatiable Green leaves, green manure and the composts are the cheapest forms for unit production. The staff under the comprehensive scheme may strain every nerve to reach the targets of production for every survey number, with suitable manuring. Ramiah and Sahasrabuddhe worked out quadratic functions to indicate the response of paddy to oil cakes at different levels in the Agricultural Stations Aduthurai, Pattambi, Coimbatore and Maruteru. These may be translated into action, in the areas served by these Stations.

6. *Seed farms on right lines.* Crop Cutting Experiments have proved beyond doubt the efficacy of departmental strains in paddy. The following from the results of crop cutting experiments show the superiority of the strains over the parent varieties.

Percentage increases of strains over locals

District	1945-46	1946-47	1947-48	Remarks.
Vizagapatam	10	15	—*	*Drought and Late Monsoon.
East Godavary	25	72*	53	*Failure with drought of dry paddy under 'local' in upland.
West Godavary	10	17	45	

Private agencies for the multiplication and distribution of improved seed are practically none and the department may have to continue its present activity in the line. Seed farms meant for pulling out rogue plants in wet land paddy would be ineffectual so long as paths to move about, are not provided at planting time, at 6 ft. distances, in the field. The owners of the crop may be compensated in this regard to permit of the operation and achieve purity in seed.

7. *Water requirements of crops, in their crucial stages.* Losses in production, with inadequate water supply in the crop maturation stage, are immense. The Agricultural Demonstrator may be commissioned with the control of the flow levels in the channels and the distributaries. He may be a member of the Irrigation Board, for his jurisdiction.

8. *Cultivable waste and mechanised farming.* In some of the northern Indian Provinces, 15 to 20% of the land, over-run by *Saccharum spontaneum* is available as cultivable waste. Such land may be straight-way put to tractor ploughing, instead of waiting to get the weed cleared by herds of cattle roaming about, for a number of years, as has been the local practice. Such lands with this weed are absent in this province. There is scope for mechanised farming in virgin land cleared from the 'partially excluded areas'. The service of tractors, gang and disc ploughs, on hire system to capitalist farmers, in areas insufficiently supplied by labour, may be continued.

9. *Fight pests and diseases as a national concern.* Crop losses due to pests and diseases amount to several crores annually. The appointment of a special demonstrator for this work to each district is the begining of the development to be undertaken in this line. Wide usage of insecticides and fungicides may be assisted under State subsidy.

10. *Markets and Prices.* "A cultivator can never protect himself against a sowcar who is both his banker and market". The hill tribes in the 'partially excluded areas' are the first to be redeemed from this pestilence. Forward transactions with mortgage of the crop in advance should be put an end to. The Firka Development body with the grain banks should take over these forward transactions and eliminate this kind of sowcar.

The Madras Agricultural Journal.

*

Is the Journal addressed to you properly?

If not, kindly let me know your correct address.

Secretary,

THE MADRAS AGRICULTURAL STUDENTS' UNION.

The Graduate Farmers of Chithradha

A Note By

S. V. DURAISWAMI AYYAR

'Back to land' by even agricultural graduates had been a failure. But it came as a pleasant surprise to hear during the recent tour in the Circars, that several non-agricultural graduates have taken up to farming as their profession in life and that they have been doing it most successfully, in the village of Chithrada, two miles to the east of Pithapuram. Most of them by virtue of connection or abilities to influence, had opportunities to enter Government service in decent jobs, but it seems they deliberately preferred to take up to farming as a profession on their own estates which varied from 15 to 50 acres. The attraction of growing sugarcane and obtaining good profits was also there. They have not regretted their decision and on the other hand they are highly satisfied to note that they are much better off than what they would have been if they had entered the much coveted service. It would be interesting to give below the financial position with the balance sheet of one who has been oldest at it and who has been able to give very reliable figures. This would give the readers an idea of the position they occupy in relation to other professions or industrial enterprises managed with the same amount of capital.

Fixed Capital:

Particulars.		Value in Rs.
Land, area owned 45 acres @ Rs. 2,000 an acre	...	90,000
Implements, carts and Miscellaneous deadstock	...	600
Petter crude oil engine and pump	...	3,000
Sinking of and construction of well	...	2,000
Value of 5 pairs work cattle including thatached Shed etc.,	...	2,500
		98,100

Charges in one year for production of crops:

Paddy 30 acres @ Rs. 150 per acre	...	4,500
Sugarcane @ Rs. 800 ,, ,,	...	12.000
Depreciation, interest charges and land revenue	...	4,000
		20,500

Receipts:

From Paddy 18 bags @ Rs. 14 per bag	...	7,560
From Sugarcane @ Rs. 1,500 an acre by supply to factory	...	22,500
		30.060
Farm labour income or nett profit	...	9 560

Percentage to capital outlay 10·5%

Note: Value of work done by permanent labour and work cattle and charges for irrigation have been included in the cost of production of crops noted above. The owner supervises all operations and no remuneration for supervision has been included under charges.

If the whole land had been given out on lease to tenant cultivators, the income would have ranged from about 7000 to 9000 rupees per annum. The owner and his family of 5 members would require at least Rs. 200 per month for decent living without anything available for savings and this amount would be derived from an area of about 15 acres. This area may be said to be an economic holding in this tract for this type of family which may be taken to represent the upper middle class.

Educated young men owning decent areas of land in their families and intending to take up to farming, may with advantage visit this village and be benefitted by the experience gained by the graduate farmers.

"Starvation of the soil is the root cause of our own starvation. Mother Earth is truly a living being, and if we do not nourish her she cannot nourish us."

— Shrimati Mira Behin.

Proceedings of the Agricultural Economics Conference at Hyderabad, December 1948

(Discussion on "Grow More Food" Problem)

Sir S. V. Ramamurthi, in his Presidential address at the 9th Agricultural Economic Conference held at Hyderabad in December last, dealt in the main with the problem of food for India. He had made a close study of it as an administrator and as a member of the Indian Famine Commission. He said: For over twentyfive years now the production of cereals in India was practically stationary while population was growing at the rate of one per cent per year, who required half a million tons of rice at the rate of 1 lb. per day. We had to import more than two million tons of rice a year before the war. With the stoppage of imports from Burma and Siam, the situation worsened. These countries were not yet able to supply us the needed quantity. The separation of Pakistan meant a deficit of one million tons of wheat. India had to import cereals to the tune of Rs. 100 crores a year.

Our deficit of cereal production was only 10 per cent of consumption. The deficit could be made good according to experts by reclamation of waste land, increased supply of water through schemes of irrigation, use of improved seeds, fertilizers and insecticides, etc. But the Grow More Food Campaign offering aid and advice in these matters produced poor results. In the opinion of Sir S. V. Ramamurthi, what was needed was an 'integral effort' of the kind which was made by him in bringing under cultivation 60,000 acres of land under the Mettur Irrigation area, and supplying the same with sulphate of ammonia. He had 60,000 new wells dug in the central dry districts by offering a subsidy of a crore of rupees from the Government. What was needed was a very sympathetic administration; it was only then the advice of experts would be followed and the deficit of ten per cent would be made good.

But he said this was not enough. We want more food, better food and a higher standard of living. The vast unused lands of India should be reclaimed and cultivated. The multi-purpose river schemes should be executed to get not only more water but cheap electric power to yield "a more variegated economic life than a mainly agricultural economy". He was of the view that agriculture could safely maintain only 60 per cent of the population. The rest should be absored in layers of industry-cottage, small-scale and large-scale-with the learned and artistic professions at the top. He expected electricity to play a great part in such an industrial reorientation. It could be applied in small units though produced in the mass. It could serve the needs of agriculture, industry, commerce and social life.

The last session of the Conference was devoted to the discussion of the "current topic" — "the Grow More Food Problem" in which several members participated.

Prof. V. K. R. V. Rao of the Delhi University initiated the discussion. He said the shortage of food was a world problem, as F. A. O. publications revealed. In India there was on the whole, an extension of acreage under food crops, but the yield did not increase appreciably, due to unfavourable seasons. In Bombay short staple cotton gave place to groundnut and not millets. Targets of production should be fixed only after ascertaining the level of consumption. Procurement should be done only from substantial farmers and not from those who had a large margin of unsatisfied demand. Mechanization of cultivation seemed to him to be a racket, not easy to apply on most of the holdings. Reclamation of waste land was not possible without stamping out of malaria. Co-operative farming would take time, if it came at all. Improved strains were not yet popular, in the case of millets. He wanted a mission to go out to China and Japan to find out how small holders there, were able to produce higher yields per acre and instruct farmers here on those methods. Prices of cereals should be guaranteed for a few years. Good farmers should be awarded prizes.

Sir S. V. Ramamurthi pointed out that these methods would not solve the problem of more food, which was urgently wanted. He suggested a change over in diet; production and consumption of tubers, potatoes and sweet potatoes to supplement cereals.

Dr. B. Natarajan, Economic Adviser to the Government of Madras, said that the problem of deficit, though longstanding grew acute only in the last four years. The production of 1938—43 which was 7·3 million tons of grains, was enough to feed the present population at 16 oz. per diem per adult. Experts held that the use of improved seeds would raise production by 10 per cent and the application of manures by another 8 per cent. But little progress has been achieved—partly due to bad seasons. There has been, on the other hand a great shrinkage in area under millets—from 13 million to 11 million acres. Groundnut has in most cases taken the place of millets. The area under food crops should be increased; at any rate it should not be cut down. Prices of food crops should not be too low compared with those of commercial crops. Some parity should be established between the two. There were 20,000 old tanks which could be renovated at a cost of Rs. 8 crores (less than one year's land-revenue of the Province), which could be spread over a few years, and the work entrusted to village panchayats who should give preference in employment to the scheduled classes and the unemployed.

Prof. J. J. Anjaria (Bombay) said that guaranteeing prices would not bring in more food; as already prices were very high. Nothing short

of an agricultural revolution in the system of land-holding was likely to produce appreciable results. Prof. K. T. Merchant (Bombay) said that more food was wanted not only now but progressively in the future as population was growing. There must be an austerity drive. "Conspicuous consumption" of all kinds, especially on social occasions, should be cut down.

Dr. J. S. Patel (Bihar) was of the view that the Grow More Food Campaign was not such a failure as made out. There was no correct estimate of production nor of consumption on the farm. The campaign to grow more food should not be relaxed; if it were, there would be a cry for its revival as in the case of food rationing.

Dr. S. V. Dakshinamurthy (Malaria Research Institute, Delhi) said that control of malaria in parts of Orissa, Bihar, Central Provinces and Hyderabad, inhabited largely by a sparse population of aborigines, would help increase of rice production to the tune of 3 million tons of rice on about 10 million acres of land.

Prof. R. V. Rao (Hyderabad) claimed that hand pounding of rice would yield 10 percent more of rice, which was more nutritious.

Mr. L. C. Sircar (West Bengal) said that a change in diet was a long range proposition. Even if tubers were so desirable, not all lands were suitable for growing tubers; and they were more perishable than cereals.

Mr. Mallinath (Mysore) said that the Agricultural Department should not be blamed. The Revenue Department gave lands to people who wanted property and were not interested in growing more food crops. The growing of summer ragi was a success in Mysore, due to effective demonstration and award of prizes to growers.

Mr. D. V. G. Krishnamurthy (Hyderabad) said that in spite of special steps taken by the State, the increased yield of cereals was only 40,000 tons on account of unfavourable seasons and the low ceiling prices. The area under groundnut which had doubled was brought down after 1947 by the imposition of heavy penalty on growing the crop in excess of the limits prescribed under the Cash Crop Restriction Regulation. The area under short staple cotton was brought down drastically, but in its place groundnut and linseed were grown. Area under sugarcane increased uninterruptedly on account of high prices offered. The Grow More Food Campaign and the Price Control and Procurement policies seemed to work at cross purposes. Liberal subsides should be given to food growers of the State in preference to paying high prices for imported grains.

Mr. S. K. Bedekar (Bombay) spoke of the steps taken in Bombay to compel the cultivator to put a minimum of his holding under food crops and prevent him from growing more than a proportion of his holding under commercial crops. This was felt as a grievance. The cultivator was now content to grow just enough of food crops for his family and not more for an unremunerative price. Why produce more and deliver so much of it at low prices?—he argued. It was difficult to change his psychology.

Sir S. V. Ramamurthi, in his concluding remarks, observed that it was not so difficult to effect a change in the psychology of cultivators as to bring about a change in economic conditions.

We are indebted to Sri K. C. Ramakrishnan, M. A., for the above account of the conference. Ed. M. A. J.

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Review.

Agrarian Reforms and Parity Economy by the Honourable Sri O. P. Ramaswami Reddiyar, Premier, Government of Madras and Member, Agrarian Reforms Committee of the A. I. C. C. *(published by the Economic Adviser to the Government of Madras, 1948).* In this pamphlet prepared for the Agrarian Reforms Committee, the Premier of Madras pleads for a fairer treatment of agriculturists than has been accorded to them so far. For more than a hundred years agriculture has been exploited by trade and industry. He is not for a return to peasant economy run on primitive lines. He is anxious to see that the benefits of science are so utilised as to create a more harmonious society and agriculture benefits at least to the extent that commerce or manufacture does. This he calls parity economy.

He would prefer a comprehensive co-operative organisation as the best means to achieve his ends. He would compel all agriculturists to join it and would like to have grain banks attached to them, which would serve a number of purposes and help to stabilise agricultural prices. He would entrust a number of functions to the co-operative organisation — including digging of canals, laying out roads, building, schools and even joint farming. The co-operative common wealth "will usher in an epoch of prosperity and self-reliance in villages" — not all at once but by stages.

Meanwhile, he indicates certain urgent lines of reform — compulsory consolidation of holdings, prevention of sub-division of holdings below the economic limit, ensuring a fair share of agricultural income to the labourer, the tenant and the land owner, supplying capital and direction. A necessary preliminary to the latter is, in his view, an assurance of minimum prices for agricultural produce on a parity with prices of manufactured goods, after a close analysis of cost accounts at all stages — which is by no means easy. He thinks that there is no need for Land Alienation Act nor for local land tribunals, except occasionally for decision of tenancy disputes.

In the place of the existing land revenue, he is for the levy of a basic tax on all lands and on the top of it a graduated tax on higher agricultural incomes. Renovation of tanks at a cost of Rs. 15 crores to 20 crores is even more urgent as protective works than the giant production works of Tungabadra, Ramapadasagara etc., which will add greatly to the agricultural wealth of the country.

We are glad to note that the Premier has abundant faith in the possibilities of scientific research in agriculture which, he urges, the state will have to continue "to an increasing extent for a long time to come" though the onus of financing industrial research will have to be shifted to the shoulders of industrialists as in the West — "when agricultural research will receive a fillip". The application of fruits of agricultural research to practical agriculture in an ever wider measure is a problem that needs more attention meanwhile.

HINTS TO FARMERS

Sorghum smut. Sorghum is one of the staple food-crops of our Province. This crop is very often affected by a disease called smut. It is prevalent in all districts especially in the crops raised in the colder months. Dirty grey bodies about half to three fourths of an inch in length develop in the place of grains on the affected plants. All the grains in a head may be thus transformed or a portion of the head may be involved. When crushed between the fingers, these bodies are found to be filled with a black powder, the spores of the fungus which causes the disease. The economic effect of the disease is in the reduction of the yield of grains.

The disease is seed borne. Since the spores of the smut fungus are attached to the seeds, the disease can be completely controlled by disinfecting the seed with finely powdered sulphur before sowing. The seeds are thoroughly mixed with sulphur using one ounce of the powder for every 15 pounds of seed. When the quantity of seed is small, the sulphur powder and the seed are placed in a closed tin or earthern vessel

and thoroughly shaken for 15 minutes. But when larger quantities are involved special seed-dressing drums are used. By this simple treatment the seeds get a coating of sulphur. When such treated seeds are sown, the infection of seedlings is prevented and the crop will be free from disease.

Though sulphur is not readily available in the market, the Agricultural Department has taken pains to stock and supply needs of cholam growers. Sulphur can be had from the nearest Agricultural Demonstrator in packets of 4 ounces each, sufficient for treating 50 pounds of seed.

Control of "damping off" in tobacco nurseries. The most serious disease commonly met with in tobacco nurseries is "damping off" of seedlings. This disease is found to take such a heavy toll that the area under nurseries every year is usually twice the required area so that the loss works out to about 50 per cent of the crop of seedlings produced.

Before 1924, it was usual to raise these nurseries in black soil areas adjacent to the fields prepared for transplanting purposes. As the destructive nature of the disease was found to be very severe in these heavy soils, it was thought that the sandy areas might be more suitable for raising the tobacco nurseries. In 1924 the I. L. T. D. Co. raised 10 acres of nurseries in the sandy area at Chirala. Since then the area has increased considerably and now the major portion of the nurseries is found only in the sandy soils. Though the sandy areas have found to be ideal for tobacco nurseries it has not been possible to check the ravages of "damping off". Even here the toll due to the disease was quite heavy when favourable conditions for the disease prevailed.

The disease is caused by a fungus which is a natural inhabitant of the soil. This organism causes the tissues of the lower portions of the stem to collapse near the ground level with the result that affected seedlings topple over, lie flat on the soil. Then the leaves and stems begin to decay rapidly.

Control. When conditions are favourable for the outbreak, the disease appears all of a sudden and spreads very rapidly sometimes damaging entire seed-beds overnight. Hence curative measures after the appearance of the disease are useless. The following preventive measures have been found quite successful in controlling the disease both in the sandy as well as black soil areas :—

(1) On the 20th day after sowing, the seed-beds should be sprayed with 1 per cent Bordeaux Mixture, at the rate of 500 gallons per acre.

(2) Two more sprayings should then be given at intervals of a fortnight.

Gleanings.

Better Yeast is Made. A new process for the manufacture of bakers' yeast -- conceived, researched and developed in Australia, is now on the way to improving the world's yeast industry and the world's bread. The new yeast has infinitely superior qualities and keeps for long periods without deteriorating even in a warm climate. It is known as the 'Deloffre Alcohol Process' after its inventor who took out world patent rights in 1940. Under the new process, many materials, additional to those generally employed, can be used but the yeast is formed in one operation, instead of several, by inoculating a highly concentrated sugar solution with a small culture of pure yeast, which is then fermented to produce a maximum quantity of alcohol. This is then used to form yeast under special conditions, produced to set up the required biological reactions under which yeast can absorb alcohol. Advantages of the process are many. Not only does it simplify the process of manufacture, but it reduces cost of production by about 30 per cent., while increasing the yield by from 20 to 25 per cent. One reason for the great saving in cost is that the mixture can be worked in much more highly concentrated forms than previously. Due to the high proportion of alcohol in the fermenting liquid, fermentation takes place under almost sterile conditions. The several operations necessary with the older processes made the growth of bacteria difficult to prevent. Further, the new process yeast is of exceedingly high keeping quality, because the alcohol reduces considerably the content of potease enzyme which is the agent of decomposition. Deloffre Process yeast has greater baking qualities with its substantially greater levening powers, since it reacts in higher degree on the flour to generate a greater quantity of carbon dioxide gas. Less yeast need be used and because of its higher keeping quality, immediate use is not so necessary. During the war, when beet molasses was unobtainable, wheat starch was transformed into glucose which, in turn, was transformed into alcohol for use in the Deloffre Process. For manufacture of the yeast, a special all-steel building was designed and equipped with machinery almost entirely Australian-made. Pipelines for conveying the mixture from apparatus to apparatus were kept at minimum length while ensuring production of yeast, untouched by hand, that had good lasting qualities. They were so constructed that proper sterilisation was possible after each operation. Entire process was automatic. Australia used something like 8,000,000 lb. of bakers' yeast each year. By 1948, some 80 per cent. of the fresh yeast used in Australia for baking purposes was made by the Deloffre Alcohol Process. (Agricultural Newsletter No. A. G. N/230).

Agricultural College and Research Institute Library, Lawley Road, Coimbatore.

MONTHLY LIST OF ADDITIONS FOR JANUARY 1949

1. HAMILTON (W. J.): American Mammals, their lives, habbits and economic relations — 1932
2. WOLCOTT (Robert H.): Animal biology, Edn. 3 — 1946

Crop and Trade Report.

Raw Cotton. The receipt of loose cotton at presses and spinning mills in the Madras Presidency from 1st February 1948 to 31st January 1949 amounted to 366,614 bales of 400 lb. lint as against an estimate of 283,700 bales of the total crop of 1947—48. The receipts in the corresponding period of the previous year were 417,426 bales. 561,073 bales mainly of pressed cotton were received at spinning mills and 35,253 bales were exported by sea while 122,922 bales were imported by sea mainly from Karachi and Bombay. (From the Director of Agriculture, Madras.)

Weather Review—For January 1949.

RAINFALL DATA.

Division	Station	Actual for month in inches	Departure from normal in inches	Total since January 1st in inches	Division	Station	Actual for month in inches	Departure from normal in inches	Total since January 1st in inches
Orissa & Circars.	Gopalpore	0·2	−0·1	0·2	South.	Negapatam	0·5	−2·9	0·5
	Calingapatam	0·1	−0·6	0·1		Aduturai*	0·3	−2·1	0·3
	Vizagapatam	0·4	+0·1	0·4		Pattukottai*	0·4	−1·2	0·4
	Anakapalle*	0·2	+0·1	0·2		Madurai	0·9	−0·5	0·9
	Samalkot*	Nil	−0·1	Nil		Pamban	6·2	+5·8	6·2
	Kakinada	Nil	−0·5	Nil		Koilpatti*	0·6	−0·5	0·6
	Maruteru*	Nil	−0·1	Nil		Palamcottah	0·3	−1·4	0·3
	Masulipatam	Nil	−0·5	Nil		Ambasamudram*	1·2	−1·9	1·2
	Guntur*	...	...	...					
	Agri. College, Bapatla	Nil	...	Nil	West Coast.				
	Veeravanam (College Farm)	Nil	...	Nil		Trivandrum	0·3	−2·5	0·3
						Cochin	Nil	−1·7	Nil
						Calicut	Nil	−0·7	Nil
Ceded Dists.						Pattambi*	Nil	−0·3	Nil
	Kurnool	Nil	−0·3	Nil		Taliparamba*	Nil	−0·1	Nil
	Nandyal*	Nil	Nil	Nil		Nileshwar*	Nil	−0·3	Nil
	Hagari*	Nil	−0·1	Nil		Pilicode*	Nil	−0·6‡	Nil
	Siruguppa*	Nil	Nil §	Nil		Mangalore	Nil	−0·6	Nil
	Bellary	Nil	−0·2	Nil		Kaukanady*	Nil	−0·3	Nil
	Rentichintala	Nil	...	Nil					
	Cuddapah	Nil	−1·2	Nil	Mysore & Coorg.				
	Anantharajpet*	Nil	−0·7	Nil		Chitaldrug	Nil	−0·8	Nil
						Bangalore	Nil	−0·5	Nil
Carnatic.	Nellore	Nil	−1·7	Nil		Mysore	Nil	−0·5	Nil
	Buchireddipalem*	Nil	−3·4	Nil					
	Madras	Nil	−5·2	Nil	Hills.	Mercara	0·1	−0·4	0·1
	Tirurkuppam*	Nil	−2·5$	Nil		Kodaikanal	0·9	−3·7	0·9
	Palur*	Nil	−2·0	Nil		Coonoor*	Nil	−5·1	Nil
	Tindivanam*	Nil	−1·7	Nil		Ootacamund*	Nil	−1·5	Nil
	Cuddalore	Nil	−7·3	Nil		Nanjanad*	Nil	−1·5	Nil
Central.	Vellore	Nil	−3·5	Nil					
	Gudiyatham*	Nil	−0·8	Nil					
	Salem	Nil	−0·9	Nil					
	Coimbatore (A. C. R. I.)*	Nil	−0·8	Nil					
	Coimbatore (C. B. S.)*	Nil	−0·8	Nil					
	Coimbatore	Nil	−0·9	Nil					
	Tiruchirapalli	Nil	−3·5	Nil ‡					

Note:— (1) * Meteorological Stations of the Madras Agricultural Department.

(2) Average of ten years data is taken as the normal.

(3) $ Average of seven years for Tirurkuppam, and eight years for Pilicode is given as ten normal.

(4) § Taluk office rainfall is Nil

(5) ‡ The actual rainfall was 0·01".

(6) ... Figures not available.

Weather Review for January 1949.

On the very first day of the month conditions were markedly unsettled in the South-west Bay of Bengal; but the very next day they became unimportant. The western disturbance over the South-west Punjab moved over the North-west Punjab and after a stay of a day, these moved away Eastwards across the hills of East Punjab and the West United Provinces.

In the latter half of the first week of the month, cold wave was experienced in East Rajputana, East Punjab, the West United Provinces, Madhya Bharat and Bhopal, as a result of which the temperatures in these places were below the freezing point.

A number of mild and unimportant western disturbances occurred in the South-west Bay of Bengal.

The weather, on the whole, was practically dry throughout the country. A few light shower occurred in a scattered manner in isolated parts of Tamilnad, Andhradesa and Rayalaseema. The only noteworthy fall in this month was at Pamban to the tune of 3·7" on 1—1—1949. On majority of days the night temperatures were generally below normal; but towards the end of the month, they were fairly above normal.

Reviewing the monsoonic weather conditions of 1948, it can be briefly stated, as pointed out in a general manner by the Food Secretary to the Government of Madras, that the South-West and the North-East, monsoons were not upto normal respectively in fourteen and twelve districts out of 25 districts. In districts like Cuddapah, Nellore, Chingleput, South Arcot, Chittoor, North Arcot, Tiruchirapalli and Tanjore, both the monsoons were below normal.

Regarding the performance of cultivated crops in these districts it is rather early to say anything definitely. It may be stated in general that the previous year — 1948 — was bad so far as the rainfed crops were concerned.

M. B. V. N. & C. B. M.

OBITUARY.

We regret to record the death of T. Gopala Rao, M. Sc., who was Botany Assistant, Coimbatore, on 30—1—1949 at his home, after a short illness.

We offer our heartfelt sympathies to the members of the bereaved family.

Departmental Notifications

GAZETTED SERVICE—POSTINGS AND TRANSFERS

Name of officers	From	To
Sri Abishaekanatham Pillai, A.	Dy. D. A. and Curator, Ootacamund,	Regional Dy. D. A., Coimbatore.
„ Bhushanam, K.	On leave,	D. A. O., Vijayavada.
„ Gopala Unnithan, M.	On leave,	D. A. O., Chittoor.
„ Nagarajan, K. R.	Entomology Assistant,	Assistant Entomologist.
„ Krishnamurthi, C. S.	Mycology Assistant,	Assistant Mycologist.
„ Palanivelu, T. S.	Assistant to the Research Engineer, Coimbatore,	Assistant Agricultural Engineer, Madras.
„ Ram Mohan Rao, A.	D. A. O., Chittoor,	A. M. O., Cuddapah.
„ Raju, C. P.	On leave,	Lecturer in Engineering, Bapatla.
„ Seshadri Sarma, P.	A. M. O., Nagpur,	A. M. O., Patiala.
„ Sankaran Nambiar, M. P.	Regional Dy. D. A., Coimbatore,	Dy. D. A., Tanjore.
„ Subramanian, T. V.	Mycology Assistant,	Assistant Mycologist.
„ Somayya, M.	D. A. O., Ellore,	D. A. O., Kurnool.
„ Vasudeva Rao Naidu, R.	On leave,	Sugarcane Specialist, S. R. S., Anakapalle.
„ Viswanatha Reddy, D.	A. M. O., Cuddapah,	On deputation to Sholapur.

SUBORDINATE SERVICE
POSTINGS AND TRANSFERS

Name of officers	From	To
Sri Adinarayana Reddy, G.	A. D., Atmakur,	A. D., Nellore.
Sri Appayyan, M. C.	A. D., Papanad,	A. D., Orthanad.
„ Chandrayya Naidu, N.	A. D., Rapur,	A. D., Ambasamudram.
„ Hanumantha Rao, D. C.,	A. D., Vinukonda,	A. D., Sompeta.
„ Hanumantha Rao, C.	A. D., Anakapalle,	F. M., A. R. S., Anakapalle.
„ Krishnamaraju, K.	Assistant in Mycology, Ellur,	Assistant in Mycology, Coimbatore.
„ Krishnamurthi Iyer, A. K.	On leave,	A. D., Vriddachalam.
Janab Khadar Razak Sahib,	A. D., Sidhout,	A. D., Vinukonda.
„ Lakshmi Reddy, M.	Assistant in Cotton, Gurzala,	A. D., Anantapur.
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